Obstruction of the small intestine caused by a hairball in 2 young beef calves

Sameeh M. Abutarbush, Otto M. Radostits

Abstract — Two beef calves, with a history of anorexia and absence of feces, were dehydrated and bloated on presentation. Intestinal obstruction was suspected based on clinical and laboratory findings. Hairballs obstructing the small intestine were removed surgically and the calves recovered. Intestinal obstruction due to hairballs has not been described before.

Résumé — Obstruction de l'intestin grêle par des trichobézoards chez 2 jeunes veaux de boucherie. Deux jeunes veaux avec une histoire d'anorexie et d'absence de fèces ont été présentés déshydratés et ballonnés. Une obstruction intestinale a été soupçonnée sur la base de trouvailles cliniques et de laboratoires. Des trichobézoards obstruant l'intestin grêle ont été extirpés chirurgicalement et les veaux se sont rétablis. L'obstruction intestinale par trichobézoards n'avait pas été décrite auparavant.

(Traduit par Docteur André Blouin)

Can Vet J 2004;45:324–325

Case 1

A 49-day-old, female Aberdeen-Angus was admitted to the clinic in February 2002 with a history of anorexia, bloating, and not passing feces for 24 h. When the owner passed a stomach tube, gas was released along with a dark, tarry substance containing feed material.

The calf was recumbent, depressed, and 10% dehydrated. The sucking reflex was weak. The temperature was 32.4°C, heart rate 80 beat/min, and respiratory rate 36 breaths/min. The mucous membranes were pale. The left side of the abdomen was distended; a "ping" and fluid splashing sounds were audible on percussion and succussion. A stomach tube was passed to the rumen, and a small amount of gas was released with a small amount of dark black fluid. There were no feces in the rectum. A venous blood gas analysis and serum electrolytes measurement revealed slight hypochloremia (chloride = 85 mmol/L, reference range 95 to 110 mmol/L). High intestinal obstruction was tentatively diagnosed. An IV catheter was placed and 3.6 L of normal saline (0.9% NaCl) and 2 L of 5% dextrose were administered over 24 h. After the hydration status was restored, a right side paracostal laparotomy was done. Exploration of the abdominal cavity revealed multiple loops of distended small intestine. A palpable distension was present in the distal part of the jejunum. An enterotomy revealed a 4 cm × 2 cm hairball, which was removed. The intestines were distended with dark brown fluid proximal to the hairball, and empty distal to it. The rumen and abomasum were distended with gas, and the greater curvature of the abomasum had an abnormally thick firm texture. The abomasum was deflated and an abomasotomy revealed 2 ulcerated, hemorrhagic, and thickened abomasal folds, which were excised. Following surgery, the blood gas analysis and serum electrolytes were normal. The packed cell volume was 0.16 L/L (reference range, 0.24 to 0.46 L/L) and the total serum protein was 35 g/L (reference range, 57 to 81 g/L). Twenty-four hours later, the calf stood without assistance, and was bright, alert, and responsive. The vital signs were within normal ranges, but the mucous membranes were still pale. The feces were black green. The sucking reflex was much improved. Three days after presentation, the calf was bright, alert, and responsive, passed normally formed feces, had a good appetite, and was discharged. One month later, the owner reported that the calf was normal and thrifty.

Department of Large Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan, 52 Campus Drive, Saskatoon, Saskatchewan S7N 5B4.

Address all correspondence to Dr. S. Abutarbush; e-mail: sameeh75@hotmail.com

Case 2

A 48-day-old, male shorthorn with a diagnosis of suspected intestinal accident was referred by a local veterinarian in May 2002. It had a history of anorexia and not passing feces for 4 d. It had been treated with several different antibiotics, 500 mL of mineral oil, and a total of 6 L of electrolytes, PO.

On presentation, the calf was bright, alert, responsive, and slightly dehydrated. The temperature was 40.3°C, heart rate was 136 beat/min, and respiratory rate was 56 breaths/min. The mucous membranes were pale. The left side of the abdomen was mildly distended. A dull, low-pitched, "pung" sound was heard on percussion over the left paralumbar fossa, and fluid splashing sounds were heard on succussion on the ventral aspect of both sides of the abdomen, but more distinctly over the ventral aspect of the left side. Respirations were labored, an expiratory grunt was obvious, and the lung sounds were louder than normal. The calf also grunted when the abdomen was palpated deeply over the right side. On rectal examination, no feces were found. A venous blood sample was submitted for a complete blood cell count and serum biochemical analysis. There was a mild mature neutrophilia (5.712×10^9/L; reference range, 0.600 to 4.00×10^9/L) and hyperfibrinogenemia (11 g/L; reference range, 2 to 7 g/L), consistent with inflammation. The serum biochemical analysis revealed azotemia and elevated urea (16.4 mmol/L; reference range, 3.5 to 10.3 mmol/L) and creatinine (237 μmol/L; reference

range, 49 to 95 μmol/L) levels. Cytological examination of the peritoneal fluid revealed the possibility of mild nonseptic inflammation with increased total solids, and mild intraperitoneal bleeding manifested by mild erythrophagocytosis. Peritonitis was suspected and the calf was given 800 mg of oxytetracycline hydrochloride, IV q24h. The calf received a total of 7.2 L of normal saline (0.9% NaCl), IV, over the first 36 h. Over the next 3 d, the calf became more depressed and did not pass any feces. Transrectal examination revealed the presence of thick mucus in the rectum. The "pung" was no longer audible over the left paralumbar fossa, but fluid splashing sounds were still audible over the right side of the abdomen, caudally and ventrally. The vital signs were within the normal range, but the calf still had a poor appetite. A tentative diagnosis of intestinal obstruction was made and a right paracostal exploratory laparatomy was done. The abomasum was in the correct anatomical position. There were several loops of dilated small intestine, some of which were adhered together by plaques of fibrin; these were carefully separated. The distal part of the small intestine (jejunum) had a palpable distension. Enterotomy revealed a hairball (1 cm × 2 cm), which was removed. One liter of lactated Ringer's solution and 3.6 L of normal saline were given during the surgery and for the next 24 h. The calf's vital signs were then normal; its appetite and sucking reflex had improved, it had begun to pass liquid feces, and it was bright, alert, and responsive. On day 7, the calf was clinically normal, passed normally formed feces, had a normal appetite, and was discharged.

Trichobezoars (hairballs) in calves originate from the ingestion of hair during periods of excessive licking (1,2). The cause of licking in adult animals is usually a skin disease characterized by itching, such occurs in scabies or pediculosis (2). In dairy calves, the ingestion of hair is usually associated with the persistent sucking of penmates (2). The ingested hair is formed into spherical or oval bodies by rolling and churning movements of the rumen or abomasum (2). Trichobezoars usually are of no clinical significance, although they may enlarge to the size of 23 cm × 18 cm and weigh up to 3.5 kg (2). Usually, they are reported as incidental findings at slaughter (2). Rarely, trichobezoars may obstruct the pyloric orifice in calves, or cause choke during regurgitation of the cud in adults (2). In 3 previous reports of intestinal obstruction in cattle and abdominal disease in calves, obstruction of the small intestine by a hairball was not described (3–5). While it has been suggested that hairballs may become lodged in the small intestine or spiral colon, no cases were referenced (6). In our cases, hairballs obstructed the lumen of the small intestine. Anorexia, absence of feces, and a distended abdomen with a "ping" and fluid splashing sounds supported a tentative diagnosis of intestinal obstruction. However, the owner did not notice any signs of abdominal pain. In Case 1, the course of the disease was more progressive and acute in nature, possibly complicated by bleeding abomasal ulcers. In Case 2, the inflammatory leukogram may have been due to the pneumonia or the peritonitis. However, no adventitial sounds or coughing was heard to indicate pneumonia. Thirty-six hours after presentation, the calf's vital signs were within normal ranges, but it had still not passed any feces. However, neither abdominal distension nor pain was present, and the calf remained stable for 4 d, but with a poor appetite. In retrospect, the decision to wait for 4 d before doing an exploratory laparotomy was questionable.

In calves with signs of abdominal distension or pain, and an absence of feces, deciding whether the abnormality is medical or surgical is a diagnostic dilemma. Medical diseases that resemble acute intestinal obstructions, include gaseous distention of the intestines, abomasum, or rumen; acute-peracute enteritis; and acute diffuse peritonitis from hematogenous infection, perforated abomasal ulcer, or rupture of an umbilical abscess (urachal abscess) (1). Abnormalities that require surgery include abomasal volvulus, torsion of the root of the mesentery, intussusception, intestinal atresia, and intestinal obstruction caused by hairballs. The criteria for an exploratory laparotomy in young calves of this age group are not highly reliable but include persistent tachycardia (> 90 to 100 beat/min), persistent abdominal distension and pain, abnormal abdominal sounds like a "ping" or fluid splashing sounds, persistent complete absence of feces for at least 24 h, hypochloremia, and abnormal peritoneal fluid indicating ischemic necrosis (intussusception, torsion of the root of the mesentery) or rupture of an abomasal ulcer (1). The failure to respond beneficially to IV fluid therapy and progressive worsening over several hours also supports a diagnosis of an abnormality requiring surgical intervention. While hairballs may mimic an acute intestinal obstruction, the peritoneal fluid may remain normal for an indefinite period, until ischemic necrosis occurs at the site of the obstruction. In some cases of acute or peracute enteritis, there may be abdominal distension and slight pain, dehydration, and tachycardia, but an absence of feces for several hours (functional ileus), which may resemble an acute obstruction (1). Intravenous fluid therapy in these cases for a few hours may be followed by the sudden onset of profuse diarrhea and improvement in clinical condition, which indicate patency of the intestinal tract.

While transrectal examination of the abdominal cavity of adult cattle with signs of intestinal obstruction is often a useful diagnostic aid, this is not possible in young calves because of their small body size. In calves, the diagnosis of an intestinal obstruction caused by hairballs that requires surgery will depend on a history of anorexia, complete absence of feces for 24 to 48 h, moderate abdominal distension and pain, abnormal abdominal sounds, normal peritoneal fluid, and failure to respond to parenteral fluid therapy over several hours. CVJ

References

1. Radostits OM, Gay CC, Blood DC, Hinchcliff KW. Veterinary Medicine: A Textbook of the Diseases of Cattle, Sheep, Pigs, Goats and Horses, 9th ed. London: WB Saunders, 2000:341–345, 193–197,1820–1821.
2. Cockrill JM, Beasley JN, Selph RA. Trichobezoars in four Angus cows. Vet Med Small Anim Clin 1978;73:1441–1442.
3. Person H, Pinsent PJN. Intestinal obstruction in cattle. Vet Rec 1977;101:162–166.
4. Fubini SL. Intestinal obstruction in calves. Proc 41th World Congr Dis Cattle, Dublin 1986;1:14–19.
5. Naylor JM, Bailey JV. A retrospective study of 51 cases of abdominal problems in the calf: etiology, diagnosis and prognosis. Can Vet J 1987;28:657–662.
6. Howard JL, Smith RA. Current Veterinary Therapy: Food Animal Practice, 4th ed. Philadelphia: WB Saunders, 1999:535–537.